

Organic Solutions to Control Coffee Rust

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Content



**Introduction
to
Naturland**

**Organic
solutions to
fight against
the Coffee
Rust**

**Experiences/opinions
of experts and
Naturland members**

Coffee Certified by Naturland (2012)



- 24 coffee farmer cooperatives
- 6 individual farmers
- 16,249 coffee farmers
- 51,666 hectares
- 47,255 tonnes of Green Coffee Naturland
→ 20 qq/hectare



Comparison of Organic Standards: Naturland and UE Regulations: Coffee



Naturland Standards for perennial tropical crops

- Agroforestry systems with shade trees: multifunctional
- Preventive protection measurements against erosion
- Treatment of wastewater from coffee wet depulping, composting coffee pulp
- Internal Control System (ICS) for small farmers
- Social standards mandatory for farmers and processors

Control of Wastewater from Coffee Wet Depulping



Filtration
tank

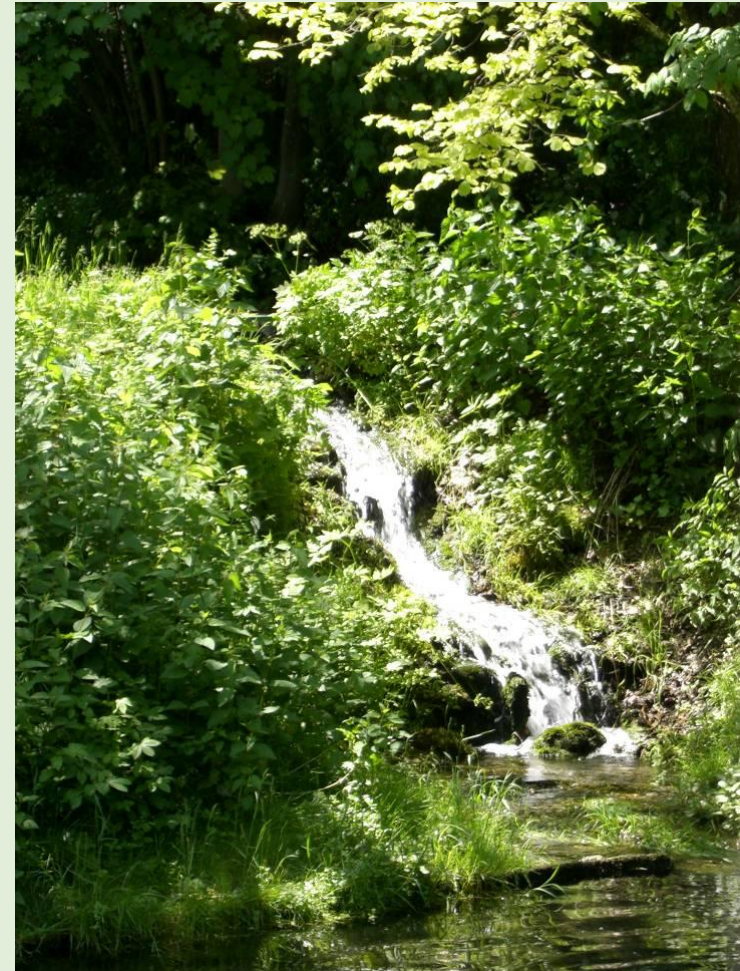


Use of
clean water

Watersheds



Watersheds will be protected by planting trees adapted to the local conditions in the buffer zone of all the rivers, streams and lakes. In the Management Plan all the appropriate protective measurements will be included.



Pioneer in Smallholder Group Certification



Internal Control System (ICS) for small farmers

- Pioneer in ICS with the inspection authority IMO and cooperatives for small farmers in Mexico
- Naturland Manual: a guide for Internal Control Systems (ICS) in organizations of small farmers, 2002
- ICS Training for cooperatives
- Active role to harmonize the requirements of ICS



Naturland Sustainability

Organic Coffee – Environmental Benefits



1. Soil protection against erosion

Improvement of soil fertility

2. Climate protection

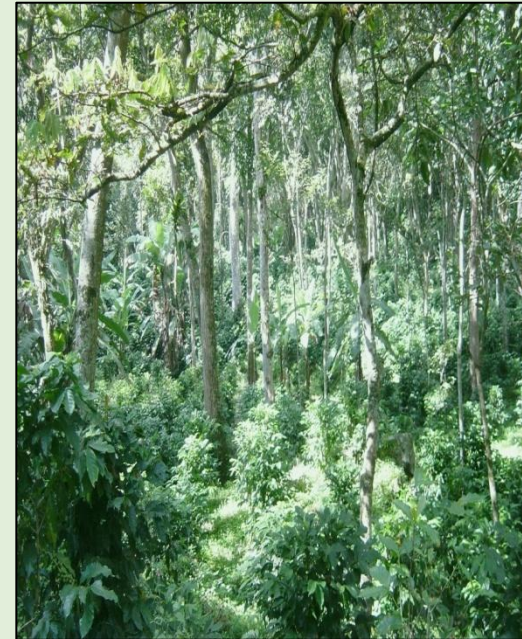
Additional fixation of CO₂ (1.0 – 4.7 tonns of carbon/ha/year)

- Shade coffee fixed more CO₂ than the “coffee under the sun”
- Organic coffee fixed more CO₂ than the coffee from “conventional agriculture”
- Neither pesticides nor synthetic fertilizers

Ecological Advantages: Buffering Climate Extremes



- Higher humus content in the organic shade coffee
- Higher capacity to absorb water from the soil, which is very important in times of high rainfall
- Increased ability to retain soil water
 - Water is available to coffee for longer periods
- Shade trees: thermal equilibrium, protection against drought effects



Environmental Benefits: Water Protection

The structure resembles the forest – Agroforestry Systems

- Filter effect
 - improved water quality, drinking water
- Water catchment area in coffee agroforestry systems:
 - balancing effect on the flow of rivers and streams
 - lower risk of flooding and drought

**The organic coffee in agroforestry multifunctional systems is
better adapted to climate extremes**



Environmental Benefits: Biodiversity Conservation



- Indicator: birds
 - 2.5 times higher density and diversity of birds
- Organic coffee Shade
 - favours natural enemies (predators, beneficial plants)
- Conventional crops: pesticides not only kill pests

Environmental Services of Different Coffee Production Systems



	Conventional coffee full sun	Organic coffee under shade	Conventional coffee under shade
1) Soil conservation	-	++	+ / ++
2) Water conservation	-	++	+
3) Carbon sequestration	-	++	+ / ++
4) Biodiversity	-	++	+

Source: Muschler 2002, Rice 2000, Masera 2003, Dossa 2008, Philpott 2004

Organic Solutions to Combat Coffee Rust



We recommend first:

PREVENTIVE MEASURES



Analysis of the organic quality of the coffee plantation

Diversity of the Agro-Ecosystem



Shade Management



The Coffee Rust is not always associated with the excess of moisture and plenty of shade. On several occasions it is rather located where the quality of the shade is not as good.

→ analyze the quality of the coffee agro-system plantation with the quantity and quality of the shadow (diversification of species, ages and middle and upper tree layer).





Shade Management– Naturland Standards



1. At least **70** shade trees per hectare with a coverage of 40% throughout the year.
2. At least **12 different species** of shade trees per hectare; the proportion of trees of the predominant species should not exceed 60% of the total amount of species.
3. The coffee trees and the shade trees should form a structure of **3 tree layers or at least 2 tree layers**. In cases with 3 tree layers the highest would consist of old trees.



Naturland standards: Production 05/2012

Part B.; IX. Tropical perennial crops



Diversified shade

Application of Organic fertilizers



Well nourished coffee plants counteract more the Coffee Rust

For example:

- Compost
- Coffee pulp
- Organic fertilizers
- Decomposed cowshed manure
- Lombrhumus
- Efficient microorganisms EM



Application of organic fertilizers increases the humus content of the soil



Effects of Humus

- Filter effect: produces better water quality
- Increased capacity to absorb the water from the soil during high rainfall
- Increased ability to retain water from the soil: the water is longer available
- Increased ability to retain nutrients from the soil: the nutrients are not easily leached
- Trees: thermal equilibrium, protection from soil drying out



Renewing Plots to Have Younger Coffee Plants



Perform phytosanitary pruning



New Plantations



Weed Control



Application of Preparations of Bacteria/Antagonists Fungi



- Efficient microorganisms (*microorganismos de montaña*)
- *Lecanicillium lecanii* (LECCANIUM)
- *Beauveria bassiana* (against coffee berry borer)

Enrich Organic Fertilizers with Efficient Microorganisms



Application of Homeopathic Preparations



Research on the farm Monte Alegro in South Brasil, Sao Paulo.

Six months of continuous treatment, with monthly foliar applications of a complex with four homeopathic preparations.

Plants treated with homeopathy were less affected than plants receiving foliar sprays copper base.

Treatment with copper-based fungicides →



Treatment with homeopathic preparations →

Source: Alexandre Henrique Leonel,
contato@homeopatiabrasil.com.br



Homeopatia[®]
Brasil.com.br

CIÊNCIA - TECNOLOGIA - SUSTENTABILIDADE

Organic Phytosanitary Products



Fungicides should not be the primary method of control nor the most important part of the control of the Coffee Rust

Fungicides allowed in organic agriculture :

- **“Caldo bordelés”** (copper sulphate+ lime)

The production and processing must be executed professionally (according to the season, the state of the development of the disease and to the sprinkling)

- **“Caldo sulfocálcico”** (sulfur+lime)
- **Combination of “caldo bórdeles” + “caldo sulfocálcico”**
- **Copper oxychloride**

According to Naturland standards, it is allowed to use a **maximum of 3 kilos** of copper per year and hectare

Organizations and Producers Surveyed



Cooperative name/farm	Members
COAGRICSAL, Honduras	247
Santa Cruz y Las Nubes S.C. de R.L., Mexico	1
Ranchos Catarina, El Potrero, La Vega, El Tapir, México	1
ISMAM, México	759
PROCAFEM, México	299
San Fernando Unión de Ejidos, México	466
TIERRA NUEVA, México	186
Cooperativa Agraria Industrial Naranjillo Ltda, Perú	340
Brack State Coffee, Perú	1
Perales Huancaruna S.A.C., Perú	2016
CAC Ubiriki, Perú	176
Cooperativa Agraria Cafetalera Tahuantinsuyo, Perú	204
Cooperativa de Servicios Multiples CENFROCAFE PERÚ	487
SPOSEL S DE SS., México	720
COSATIN, Nicaragua	258

In total: 6161

Experts and Organic Inspectors Surveyed



Inspectors/ Experts	Organization	Country
Lucino Sosa	University Chapingo	México
Roberto Moyano	IMO-LA	Bolivia
Ivan Del Carpio	IMO-LA	Bolivia
Susanna Schuller	Junta Nacional de Café (JNC)	Perú
Jorge Landeo	IMO-LA	Perú
Omar Leaño	IMO-LA	Bolivia
Jaime Ricardo Picado Aragón	Bio Latina	Nicaragua
Rosmery Arnez	IMO-LA	Bolivia
Mireya Saavedra	IMO-LA	Bolivia
Oliver Hunkler	CERES	México
Alberto Levy	IMO-LA	Bolivia
Oscar Zacarías	IMO-LA	Guatemala
Fredy Choez	COFENAC, APEOSAE	Ecuador
Osvaldo García	IMO-LA	Bolivia
Grover Valdivia	IMO-LA	Bolivia
Roxana Balderana	IMO-LA	México
Rodolfo Guzmán	Mayacert	Guatemala
José Matehuala	IMO-LA	México

Responses from Inspectors and Experts



¿What factors are you checking that contribute to control Coffee Rust ?

These factors help the plants to be strong and resistant against Coffee Rust

	lot	more or less	few
Soil fertility	12	1	1
Plant coverage to prevent erosion	3	4	5
Good shade with different tree layers	9	3	0
Plenty of shade trees	1	3	7
Little shade trees	1	4	6
Only shade trees with Inga trees	1	5	6
Well nourished plants	12	2	0
Organic foliar fertilizers	8	3	2
Old coffee plants	0	0	14
Coffee varieties	11	1	1
Used of bacteria preparations/ pathogenic fungi	5	2	4
Fumigation with copper products allowed in organic agriculture	2	7	3

Responses from Producers



¿What factors are you checking that contribute to control Coffee Rust ?

These factors help the plants to be strong and resistant against Coffee Rust

	lot	more or less	few
Soil fertility	23	1	1
Plant coverage to prevent erosion	7	12	6
Good shade with different tree layers	18	6	-
Plenty of shade trees	2	7	16
Little shade trees	3	9	13
Only shade trees with Inga trees	3	8	13
Well nourished plants	23	2	0
Organic foliar fertilizers	19	4	2
Old coffee plants	1	6	18
Coffee varieties	20	2	2
Used of bacteria preparations/ pathogenic fungi	9	10	5
Fumigation with copper products allowed in organic agriculture	6	13	5

Responses from Producers, Inspectors and Experts



¿What factors are you checking that contribute to control Coffee Rust ?

These factors help the plants to be strong and resistant against Coffee Rust

	lot	more or less	few
Soil fertility	35	2	2
Plant coverage to prevent erosion	10	16	11
Good shade with different tree layers	27	8	0
Plenty of shade trees	3	10	23
Little shade trees	4	13	19
Only shade trees with Inga trees	4	13	19
Well nourished plants	35	4	0
Organic foliar fertilizers	27	7	4
Old coffee plants	1	6	32
Coffee varieties	31	3	3
Used of bacteria preparations/ pathogenic fungi	14	12	9
Fumigation with copper products allowed in organic agriculture	8	20	8

Survey Results

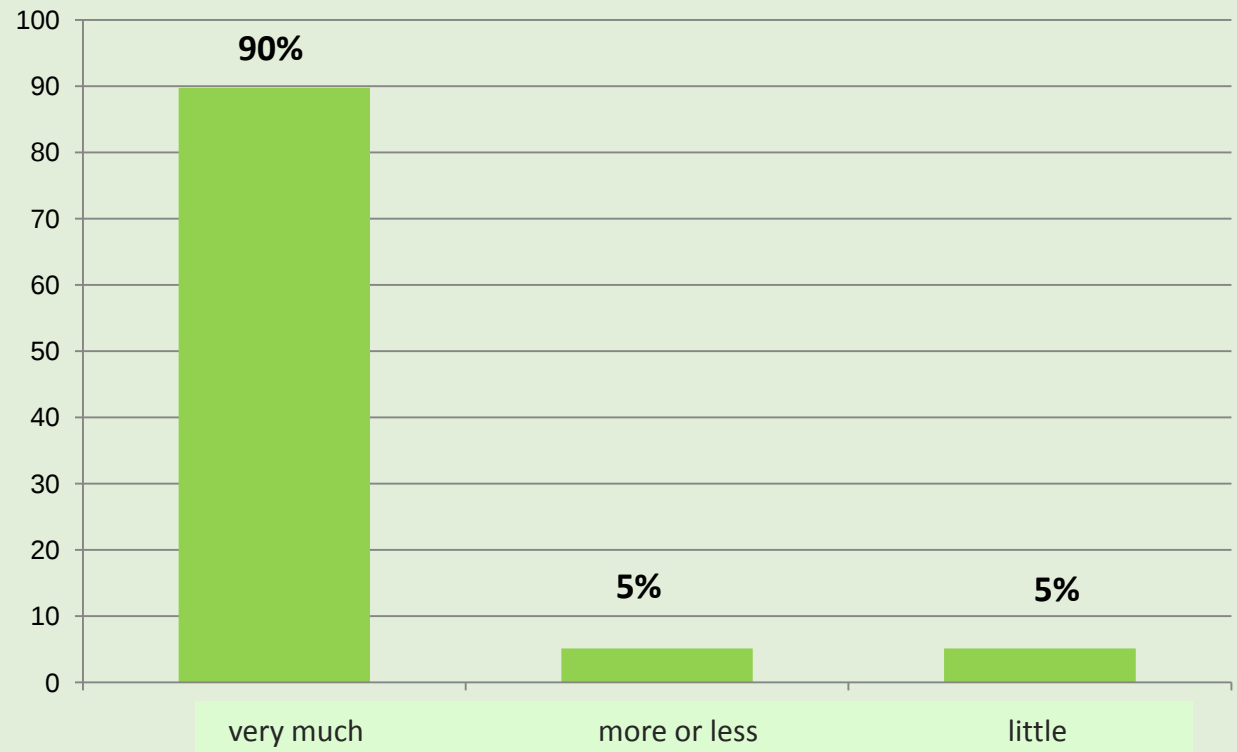


Survey participants

Inspectors/experts: 19

Organizations/farms: 17 (with 6,161 producers)

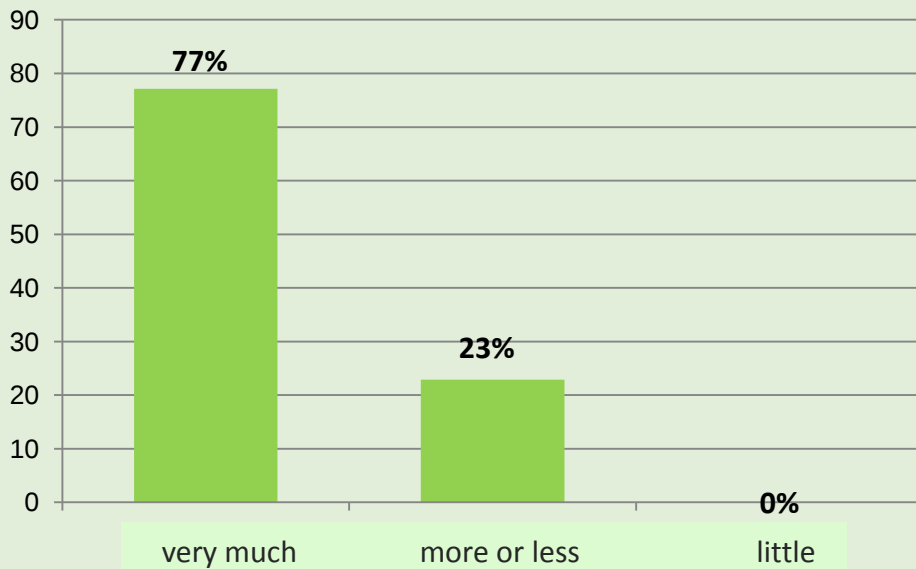
Soil Fertility



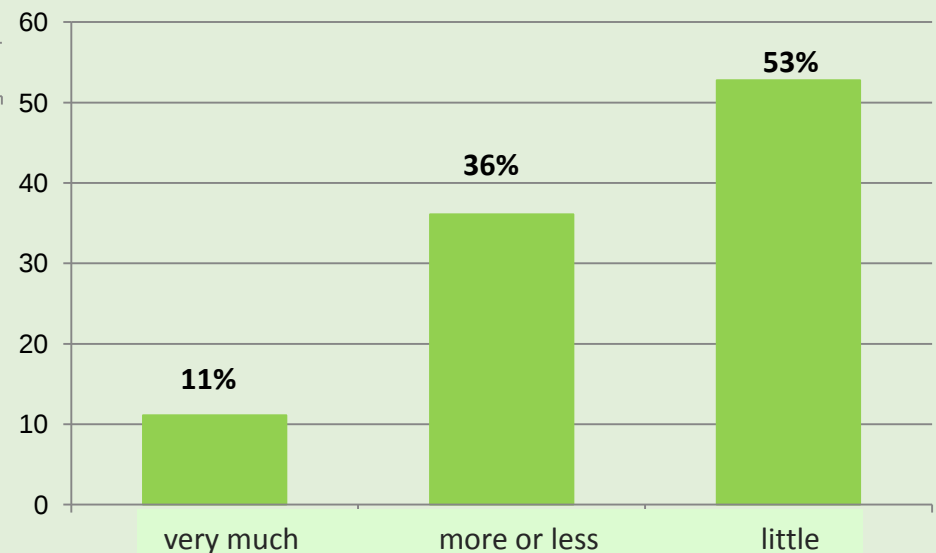
Survey Results



Good shade with different tree layers



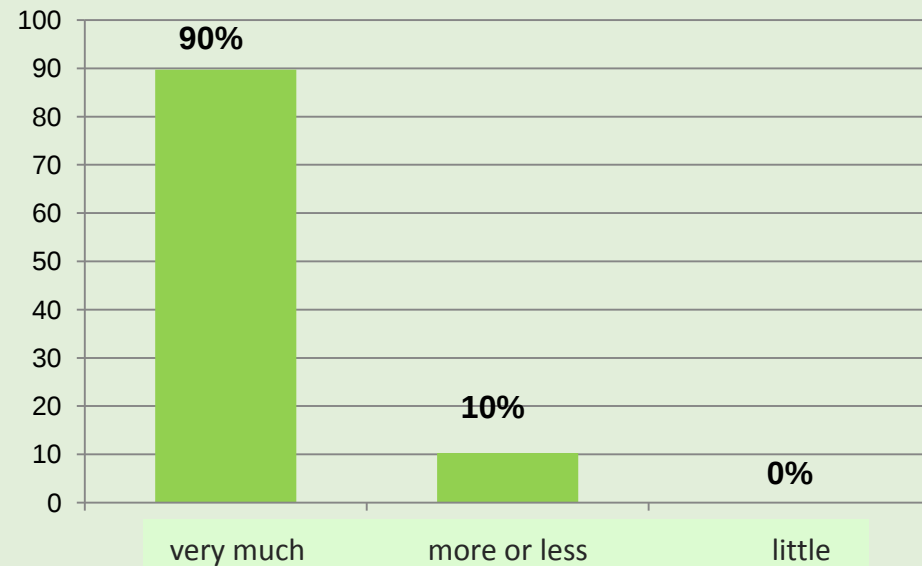
Shade only with Inga trees



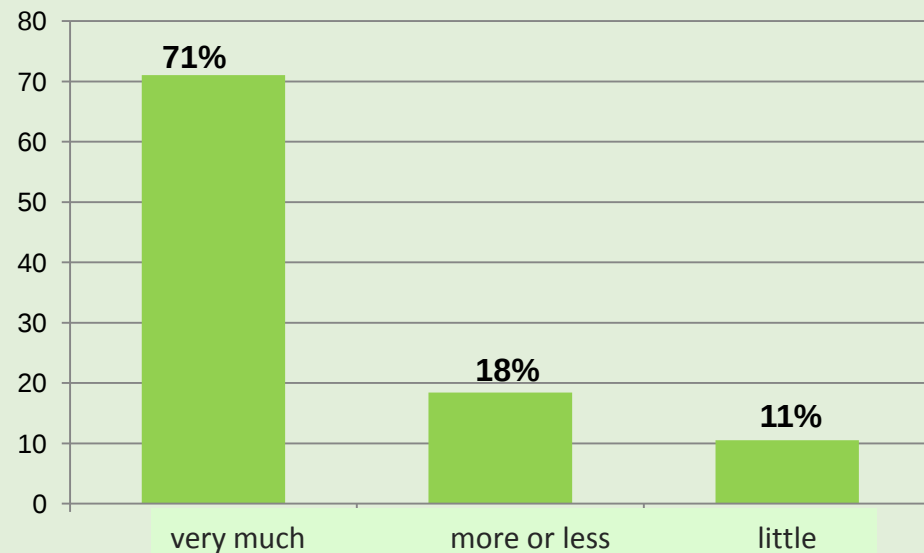
Survey Results



Well nourished plants



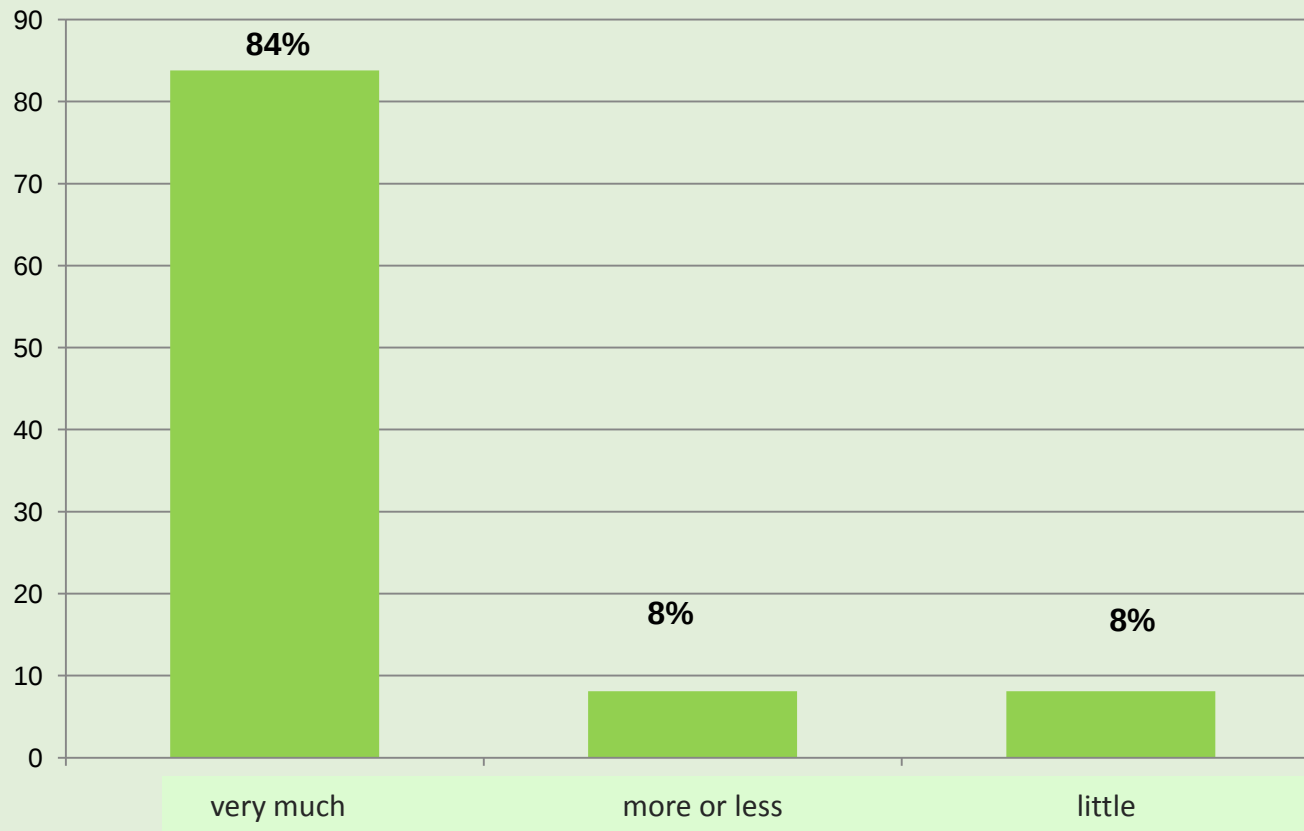
Organic Foliar Fertilizers



Survey Results



Coffee Varieties



Using Coffee Varieties Tolerant to Rust

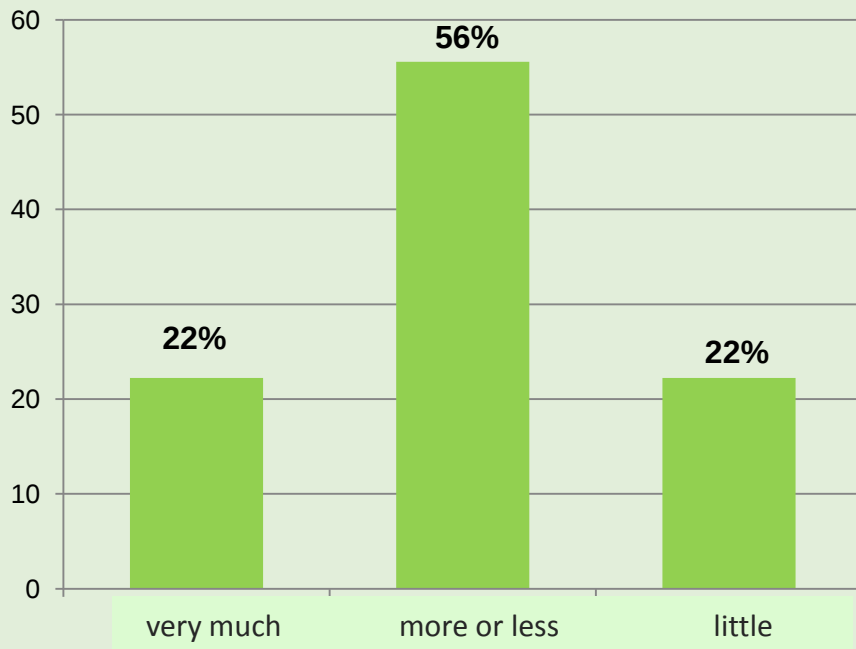


Name	Country	Varieties	
		+	-
Alberto Levy (IMO Control)	México	<i>In the lower areas, the varieties Catimor and Costa Rica are tolerant to Rust; the variety Borbon somewhat less</i>	<i>The Catimor variety not in high and moist areas, because they are susceptible to the "mal de hilacha"</i>
PROCAFEM	México	<i>Catimor, Catuai</i>	
Enrique Lopez Aguilar (Finca Chelin)	México	<i>Tipica, Pluma Hidalgo</i>	
IHCAFE	Honduras	<i>Costa Rica 95, Lempira, Parainema</i>	
PERHUSA	Perú	<i>Catimor, Castillo, Catuai</i>	
CENFROCAFE	Perú	<i>In CENFROCAFE we have obtained up to 86 points in the cup of coffee test with Catimor variety produced at an altitude of 1700 meters above sea level</i>	
Tahuantinsuyo	Perú	<i>Catuai, Gran Colombia</i>	
Jorge Landeo (IMO Control)	Perú	<i>Catimor, Gran Colombia, Costa Rica 95</i>	
Junta Nacional de Café	Peru	<i>Catimor, Castillo, CR 95</i>	

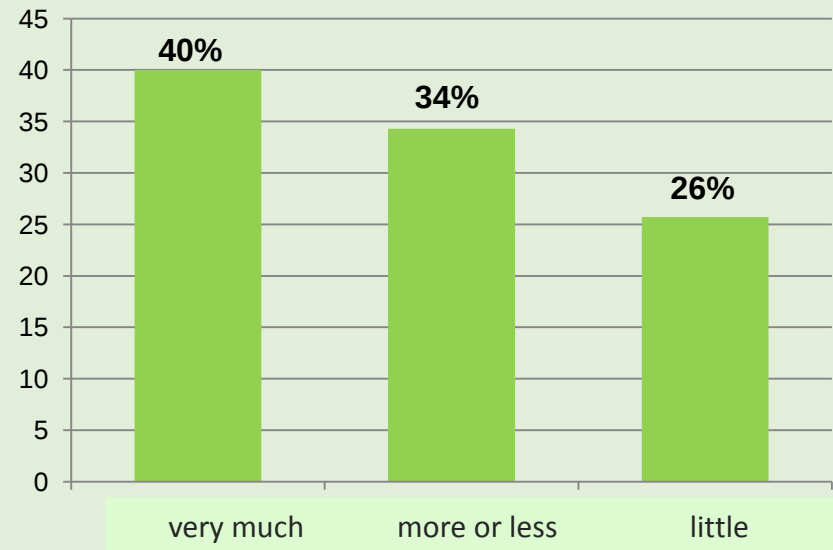
Survey Results



Fumigation with Copper Products allowed in organic agriculture



Use of Bacteria Preparations/ Fungal Pathogens



Thank you very much for your attention!



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<http://www.naturland.de/producerinformation.html>

